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EXAMINER	
QUIETT, CARRAMAH J	

ART UNIT	PAPER NUMBER
2622	

NOTIFICATION DATE	DELIVERY MODE
06/02/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/822,000	SATO, GENTA	
	Examiner	Art Unit	
	Carramah J. Quiett	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment(s), filed on 01/17/2008, have been entered and made of record. Claims 1-33 are pending.

Response to Arguments

2. Applicant's arguments with respect to claims 1-33 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. **Claims 1-33** are objected to because of the following informalities: the Applicant has not properly introduced several terms in several pending claims. The terms include "the white balance correction values", "the RGB signals", "the color information", "*the number* of color information", "the ratios", "the representative color information", "the target color information" etc. Respectfully, please check for similar informalities as well as using consistent claim terminology in all of the pending claims. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 1-10, 18, 19, 23, and 29** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. **Claim 1** recites the limitation "*calculating* the white balance correction values *based on the RGB signals* obtained from a color image pickup element " in lines 2-3 of claim 1. Then, claim 1 recites the limitations, "…*calculating* the white balance correction values *based on said counted number*; and calculating said white balance correction values *based on the color information* contained in said specific group." Respectfully, the latter limitations are contradictions to the prior limitation. There is insufficient antecedent basis for this limitation in the claim.

7. **Claim 1** recites the limitation "grouping the color information for said plurality of division areas for every color information similar to each other" in lines 9-10 of claim 1. Then, claim 1 recites the limitation, "counting the number of color information within each of the groups into which *the color information is grouped*…" Respectfully, is "the color information" grouped more than once? There is insufficient antecedent basis for this limitation in the claim.

8. **Claim 18** recites the limitation "…calculating device calculates said white balance correction values based on the color information contained in said specific group of color information from among grouped color information wherein target color information comprises the representative color information representing the color information within each group" in lines 3-4 of claim 5. While claim 18 recites the composition of "target color information", how does "target color information" related to white balance adjustment of the claimed invention. There is insufficient antecedent basis for this limitation in the claim.

9. **Claim 19** recites the limitation "…calculating device calculates said white balance correction values based on the color information contained in said specific group of color information from among grouped color information wherein target color information comprises

the representative color information representing the color information within each group" in lines 3-4 of claim 19. While claim 19 recites the composition of "target color information", how does "target color information" related to white balance adjustment of the claimed invention. There is insufficient antecedent basis for this limitation in the claim.

10. **Claim 23** recites the limitation "…then *multiplying the RGB signals by the white balance fine adjustment values* and multiplying the RGB signals by the white balance correction values according to the light source species selected by the user." in lines 7-10 of claim 23. However, in the preceding lines (3-4), claim 23 recites the limitation, "multiplying the RGB signals by the white balance fine adjustment values…" Respectfully, are the RGB signals multiplied by the white balance fine adjustment values more than once? There is insufficient antecedent basis for this limitation in the claim.

11. **Claim 29** recites the limitation "…then *multiplying the RGB signals by the white balance fine adjustment values* and multiplying the RGB signals by the white balance correction values according to the light source species selected by the user." in lines 7-10 of claim 29. However, in the preceding lines (3-4), claim 29 recites the limitation, "multiplying the RGB signals by the white balance fine adjustment values…" Respectfully, are the RGB signals multiplied by the white balance fine adjustment values more than once? There is insufficient antecedent basis for this limitation in the claim.

Note: Due to the objections/rejections as described above, the Examiner will provide the best interpretation to the claims as possible for the prior art rejection.

Claim Rejections - 35 USC § 103

12. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

13. **Claims 1-9, 11-20, 22, 26-28, and 32-33** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (US 7,009,640) in view of Taskeshita (US 7,084,907).

For **claim 1**, Ishii teaches an automatic white balance adjusting method (col. 4, line 23 – col. 5, line 9), comprising:

calculating the white balance correction values based on the RGB signals obtained from a color image pickup element (col. 1, lines 33-60); and

adjusting the white balance of said RGB signals based on said calculated white balance correction values (col. 5, lines 5-9);

wherein said step of calculating the white balance correction values comprises:

acquiring the color information for each of a plurality of division areas in which one screen (color chart) is divided into a plurality of areas (patches), based on said RGB signals within each division area (col. 24, line 59 – col. 25, line 10);

grouping (XYZ tristimulus values) the color information for said plurality of division areas for every color information similar to each other (col. 25, line 18 – col. 27, line 24);

counting the number of color information within each of the groups into which the color information is grouped (col. 20, lines 53-65; col. 23, lines 19-62; col. 27, lines 25-26)

However, Ishii does not expressly teach obtaining a specific group of color information from among the grouped color information for use in calculating the white balance correction values based on said counted number; and calculating said white balance correction values based on the color information contained in said specific group.

In a similar field of endeavor, Takeshita teaches obtaining a specific group of color information (an area with the largest number of sets of chromaticity data) from among the grouped color information (areas 1~6 representing the sunlight sources) for use in calculating the white balance correction values based on said counted number (col. 9, lines 51-67); and calculating said white balance correction values based on the color information contained in said specific group (col. 10, lines 1-27). In light of the teaching of Takeshita, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the counting method of Ishii with the counting method as recited in claim 1 in order to prevent color failure of the subject by estimating the type of light source being used (Takeshita, col. 1, lines 29-52).

For **claim 2**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 1, wherein said acquiring the color information of said division area comprises integrating the RGB signals within said division area for each color to obtain an integrated value for each color (Ishii, col. 24, line 59 – col. 25, line 64), and acquiring the ratios R/G and B/G of said integrated value for each color and having the ratios R/G and B/G as the color information of said division area (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27).

For **claim 3**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 2, wherein said grouping comprises acquiring the distance in the color information between said adjacent division areas on a color space represented by R/G and B/G, and grouping the color information for said adjacent division areas as the same group when said acquired distance is less than or equal to a predetermined value (Ishii, col. 21, lines 3-40; Takeshita, col. 10, lines 1-27).

For **claim 4**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 1, wherein said obtaining the specific group comprises obtaining the group from among the grouped color information, as said specific group, in which the number of color information within each of the groups into which the color information is grouped is greater than or equal to a predetermined number (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 9, lines 51-67; col. 10, lines 1-27).

For **claim 5**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 4, wherein said calculating the white balance correction values comprises calculating the white balance correction values to make the representative color information representing the color information within each group the target color information (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27), and

calculating said white balance correction values by adding the calculated white balance correction values for each group that is weighted by the number of color information with each group, when there are a plurality of said specific groups (Takeshita, col. 10, lines 1-27).

For **claim 6**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 1, wherein said obtaining the specific group comprises

obtaining, as said specific group from among the grouped color information, a group having the largest number of color information within each of the groups into which the color information is grouped (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27).

For **claim 7**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 6, wherein said calculating the white balance correction value comprises calculating the white balance correction values to make the representative color information within said group having the largest number of color information the target color information (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27).

For **claim 8**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 3, wherein said distance is calculated according to the following formula:

$$D = \sqrt{\left\{\left(R_1 / G_1 - R_2 / G_2\right)^2 + \left(B_1 / G_1 - B_2 / G_2\right)^2\right\}}$$

wherein R_1/G_1 and B_1/G_1, represent a first piece of color information representing a first point in the color space;

wherein R_2/G_2 and B_2/G_2 represent a second piece of color information representing a second point in the color space; and

wherein D is the distance in the color information between said adjacent division areas in a color space represented by R/G and B/G. Please read Ishii, col. 21, lines 3-40; Takeshita, col. 10, lines 1-27.

For **claim 9**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 3, wherein said distance is calculated according to the following formula:

$$D^2 = (R_1/G_1 - R_2/G_2)^2 + (B_1/G_1 - B_2/G_2)^2$$

wherein R_1/G_1 and B_1/G_1, represent a first piece of color information representing a first point in the color space;

wherein R_2/G_2 and B_2/G_2 represent a second piece of color information representing a second point in the color space; and

wherein D is the distance in the color information between said adjacent division areas in a color space represented by R/G and B/G. Please read Ishii, col. 21, lines 3-40; Takeshita, col. 10, lines 1-27.

For **claim 11**, Ishii discloses an automatic white balance adjusting apparatus (fig. 32) for adjusting the white balance of an input RGB image (col. 4, line 23 – col. 5, line 9), comprising:

a color acquisition device to acquire color information for each of a plurality of division areas (patches)of a screen-divided (color chart) input RGB image (col. 24, line 59 – col. 25, line 10);

a grouping device for grouping (XYZ tristimulus values) the color information for said plurality of division areas for color information similar to each other (col. 25, line 18 – col. 27, line 24);

a counting device for counting the number of color information within each of the groups (col. 20, lines 53-65; col. 23, lines 19-62; col. 27, lines 25-26);

an adjusting device for adjusting the white balance of said input RGB image (col. 5, lines 5-9)

However, Ishii does not expressly disclose a calculating device wherein a specific group of color information from among the grouped color information is obtained for use in calculating

the white balance correction values based on said counted number and the color information contained in said group; and an adjusting device for adjusting the white balance of said input RGB image based on said calculated white balance correction values.

In a similar field of endeavor, Takeshita discloses a calculating device wherein a specific group of color information (an area with the largest number of sets of chromaticity data) from among the grouped color information (areas 1~6 representing the sunlight sources) is obtained for use in calculating the white balance correction values based on said counted number (col. 9, lines 51-67) and the color information contained in said group (col. 10, lines 1-27); and an adjusting device for adjusting the white balance of said input RGB image based on said calculated white balance correction values (col. 9, lines 51-67; col. 10, lines 1-27). In light of the teaching of Takeshita, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus of Ishii with the apparatus as recited in claim 11 in order to prevent color failure of the subject by estimating the type of light source being used (Takeshita, col. 1, lines 29-52).

For **claim 12**, Ishii, as modified by Takeshita, discloses the apparatus of claim 11, wherein the color acquisition device comprises:

an integrating device (fig. 33, ref. 872) that integrates RGB signals within said division area to obtain an average integrated value for each color in each division area (Ishii, col. 25, line 33 – col. 25, line 50; Takeshita, col. 10, lines 1-27);

a second calculating device (fig. 1, ref. 35C) that calculates ratios R/G and B/G of said average integrated value in each division area; wherein said ratios R/G and B/G represent the color information of each division area (Takeshita, col. 10, lines 1-27).

For **claim 13**, Ishii, as modified by Takeshita, discloses the apparatus of claim 11, wherein the grouping device comprises:

a third calculating device (Ishii, ref. 824) that calculates distance in the color information between said division areas on a color space represented by R/G and B/G, and groups the color information for said division areas as the same group when said acquired distance is less than or equal to a predetermined value (Ishii, col. 21, lines 3-40; Takeshita, col. 10, lines 1-27).

Claims 14-15 are apparatus claims corresponding to method claims 8-9, respectively. Therefore, claims 14-15 are analyzed and rejected as previously discussed with respect to claims 8-9, respectively.

For **claim 16**, Ishii, as modified by Takeshita, discloses the apparatus of claim 11, wherein said specific group of color information from among grouped color information obtained in said calculating device is the group in which the number of counted color information within each of the groups is greater than or equal to a predetermined number (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 9, lines 51-67; col. 10, lines 1-27).

For **claim 17**, Ishii, as modified by Takeshita, discloses the apparatus of claim 11, wherein said specific group of color information from among grouped color information obtained in said calculating device is the group having the largest number of color information among the groups (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27).

For **claim 18**, Ishii, as modified by Takeshita, discloses the apparatus of claim 16, wherein said calculating device calculates said white balance correction values based on the color information contained in said specific group of color information from among grouped color information wherein target color information comprises the representative color information representing the color information within each group (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27).

For **claim 19**, Ishii, as modified by Takeshita, discloses the apparatus of claim 17, wherein said calculating device calculates said white balance correction values based on the color information contained in said specific group of color information from among grouped color information wherein the target color information comprises the representative color information within said group having the largest number of color information (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27).

For **claim 20**, Ishii, as modified by Takeshita, discloses the apparatus of claim 11, wherein said calculating device calculates said white balance correction values by adding the calculated white balance correction values for each group that is weighted by the number of color information within each group, when there are a plurality of said specific groups (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27).

For **claim 22**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 1, further comprising:

calculating white balance fine adjustment values (Takeshita, col. 10, lines 1-27); and

multiplying the RGB signals by the white balance fine adjustment values (Takeshita, col. 10, lines 1-27);

wherein upon said acquiring the color information for each of the plurality of division areas, acquiring the color information for each of the plurality of division areas is based on the RGB signals multiplied by the white balance fine adjustment values (Takeshita, col. 10, lines 1-27; col. 11, lines 51-65).

For **claim 26**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 1, further comprising:

discriminating light source species at the actual photographing based on the RGB signals (Takeshita, col. 7, lines 10-25); and

making white balance adjustment according to the discriminated light source species (Takeshita, col. 9, lines 51-67; col. 10, lines 1-27).

For **claim 27**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 26, wherein said discriminating light source species at the actual photographing, discriminating the light source species by obtaining the light source species having the color information to which the color information representing the group having the maximum number of the color information is closest among the color information of light source species (Takeshita, col. 9, lines 51-67; col. 10, lines 1-27; col. 10, line 49 – col. 11, line 59).

Claims 28 and 32-33 are apparatus claims corresponding to method claims 22 and 26-27, respectively. Therefore, claims 28 and 32-33 are analyzed and rejected as previously discussed with respect to claims 22 and 26-27, respectively.

14. **Claims 10 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (US 7,009,640) in view of Taskeshita (US 7,084,907) as applied to claims 5 and 20 above, and further in view of Hubina et al. (US 6,876,384).

For **claim 10**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 5. However, Ishii, as modified by Takeshita, do not expressly teach wherein said white balance correction values are calculated according to the following formulas: $Gr = \sum Gri \times \left(Ni / \sum Ni\right)$, $Gb = \sum Gbi \times \left(Ni / \sum Ni\right)$ wherein *Gr* is an R/G gain and *Gb* is an B/G gain; wherein N is the number of pieces of color information within each specific group; and wherein *i* is the range of summation representing a number of the specific groups.

In a similar field of endeavor, Hubina teaches an automatic white balance adjusting method wherein said white balance correction values are calculated according to the following formulas: wherein said white balance correction values are calculated according to the following formulas: $Gr = \sum Gri \times \left(Ni / \sum Ni\right)$, $Gb = \sum Gbi \times \left(Ni / \sum Ni\right)$ wherein *Gr* is an R/G gain and *Gb* is an B/G gain; wherein N is the number of pieces of color information within each specific group; and wherein *i* is the range of summation representing a number of the specific groups. Please read col. 14, lines 21-67. In light of the teaching of Hubina, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Ishii, as modified by Takeshita, with the white balance adjusting method as recited in claim 10. This modification provides a more accurate representation of the colors in an imaged object (Hubina, col. 2, lines 5-12).

Claim 21 is an apparatus claim corresponding to method claim 10. Therefore, claim 21 is analyzed and rejected as previously discussed with respect to claim 10.

15. **Claims 23 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (US 7,009,640) in view of Taskeshita (US 7,084,907) as applied to claims 1 and 11 above, and further in view of Higuchi (US 7,151,563).

For **claim 23**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 1, further comprising:

calculating white balance fine adjustment values (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 6, lines 51-65; col. 10, lines 1-27);

multiplying the RGB signals by the white balance fine adjustment values (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27);

then multiplying the RGB signals by the white balance fine adjustment values and multiplying the RGB signals by the white balance correction values according to the light source species selected by the user (Ishii, col. 26, line 52 – col. 27, line 21; Takeshita, col. 10, lines 1-27).

However, Ishii, as modified by Takeshita, do not expressly teach discriminating whether the white balance adjusting mode is the manual white balance adjusting mode or the automatic white balance adjusting mode; and discriminating the white balance adjusting mode as the manual white balance adjusting mode.

In a similar field of endeavor, Higuchi teaches an automatic white balancing method comprising discriminating whether the white balance adjusting mode is the manual white balance

adjusting mode or the automatic white balance adjusting mode; and discriminating the white balance adjusting mode as the manual white balance adjusting mode. Please read col. 5, line 64 – col. 6, line 13. In light of the teaching of Higuchi, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Ishii, as modified by Takeshita, with the white balance adjusting method as recited in claim 23 in order to provide white balance adjustment (manually or automatically) regardless of the imaging condition.

Claim 29 is a method claim corresponding to method claim 23. Therefore, claim 29 is analyzed and rejected as previously discussed with respect to claim 23.

16. **Claims 24 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (US 7,009,640) in view of Taskeshita (US 7,084,907) as applied to claims 22 and 28 above, and further in view of Takemoto (US 7,081,918).

For **claim 24**, Ishii, as modified by Takeshita, teaches the automatic white balance adjusting method according to claim 22, further comprising:

obtaining RGB signals by photographing a *color* chart under an adjusted light source corresponding to a predetermined light source species (Taskeshita, col. 25, lines 18-26);

making white balance adjustment by multiplying the RGB signals obtained by photographing the color chart by preset white balance correction values corresponding to the predetermined light source species (Ishii, col. 26, line 52 – col. 27, line 43; Takeshita, col. 10, lines 1-27);

calculating average integrated values for the RGB signals obtained by photographing the color chart over one full screen after the white balance adjustment (Ishii, col. 25, lines 33-64; col. 26, lines ; and

calculating the white balance fine adjustment values, wherein the white balance fine adjustment values are ratios of the calculated average integrated values to target average integrated values corresponding to a predetermined light source species (Takeshita col. 9, lines 51-67; col. 10, lines 1-27).

However, Ishii, as modified by Takeshita, does not expressly teach a gray chart.

In a similar field of endeavor, Takemoto teaches obtaining RGB signals by photographing a gray chart under an adjusted light source corresponding to a predetermined light source species (col. 17, lines 28-41). In light of the teaching of Takemoto, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chart of Ishii with a gray chart as recited in claim 24 in order to generate a model tone characteristic profile thereby creating a high-quality reproduce image (Takemoto, col. 4, lines 3-14).

Claim 30 is an apparatus claim corresponding to method claim 24. Therefore, claim 30 is analyzed and rejected as previously discussed with respect to claim 24.

17. **Claims 25 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishii et al. (US 7,009,640) in view of Taskeshita (US 7,084,907) and Higuchi (US 7,151,563) as applied to claims 23 and 29 above, and further in view of Takemoto (US 7,081,918).

Claim 25 is a method claim corresponding to method claim 24. Therefore, claim 25 is analyzed and rejected as previously discussed with respect to claim 24.

Claim 31 is an apparatus claim corresponding to method claim 24. Therefore, claim 31 is analyzed and rejected as previously discussed with respect to claim 24.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carramah J. Quiett whose telephone number is (571)272-7316. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NgocYen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Carramah J. Quiett/
Examiner, Art Unit 2622
May 27, 2008

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